

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant	:	Richard J. Harp
Appl. No.	:	10/675,068
Filed	:	September 29, 2003
For	:	RECIPROCATING SURGICAL FILE
Examiner	:	V. Nguyen
Group Art Unit	:	3731
Confirmation No.	:	5071

**REQUEST FOR ENTRY OF AMENDMENT TO TITLE  
AND  
REQUEST FOR CORRECTED FILING RECEIPT**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

Applicant hereby requests that the Title of the above-captioned application be amended as requested in the AMENDMENT filed by Applicant on August 16, 2007 to read "RECIPROCATING SURGICAL FILE" instead of "Shielded Reciprocating Surgical File."

In the Amendment filed by Applicant on August 16, 2007, a copy of which is attached, Applicant requested that the title be amended in the "Amendments to the Specification" section on page 2 of the Amendment. However, the Notice of Allowability transmitted by the Office on February 5, 2008 still used the previous, unamended title.

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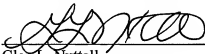
Accordingly, Applicant respectfully requests that the Amendment to the specification be entered so that the title is amended to read "RECIPROCATING SURGICAL FILE".

Applicant further requests a Corrected Filing Receipt reflecting this change.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 5/5/08

By: 

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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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AMENDMENT

**Mail Stop Amendment**  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

In response to the Office Action emailed July 11, 2007, please reconsider the above-captioned application in light of the following amendments and remarks.

**Amendments to the Specification** are listed on page 2 of this paper.

**Amendments to the Claims** are reflected in the listing of claims which begins on page 3 of this paper.

**Remarks/Arguments** begin on page 10 of this paper.

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**AMENDMENTS TO THE SPECIFICATION**

Please amend the TITLE of the specification as follows:

**SHIELDED RECIPROCATING SURGICAL FILE**

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AMENDMENTS TO THE CLAIMS

Please amend the claims to read as follows.

Please cancel Claim 19 without prejudice.

- 1-19. (Canceled)
20. (Currently Amended) The surgical instrument of claim ~~19~~36, wherein the housing is concave about at least a portion of its long axis.
21. (Original) The surgical instrument of claim 20, wherein the housing is concave about at least a distal portion of its long axis.
22. (Currently Amended) The surgical instrument of claim ~~36~~19, wherein the housing is convex about at least a portion of its long axis.
23. (Original) The surgical instrument of claim 22, wherein the housing is convex about at least a distal portion of its long axis.
24. (Currently Amended) The surgical instrument of claim ~~36~~19, wherein the first opening is in an opening surface on the housing.
25. (Currently Amended) The surgical instrument of claim ~~36~~19, wherein the housing is curved along its long axis, to assist in placing the surgical instrument in the body of a patient.
26. (Currently Amended) The surgical instrument of claim ~~36~~19, wherein the blade is substantially flat.
27. (Previously Presented) The surgical instrument of claim 24, wherein the housing is curved along its long axis in a direction toward the opening surface.
28. (Currently Amended) The surgical instrument of claim ~~36~~19, further comprising at least one bearing retainer for reducing friction.
29. (Original) The surgical instrument of claim 28, wherein said at least one bearing retainer has at least one slot configured to transmit fluid toward a distal end of the instrument.
30. (Currently Amended) The surgical instrument of claim ~~36~~19, further comprising at least one fiberoptic in or on the housing, for transmission of at least one of a video signal and illumination light.
31. (Currently Amended) The surgical instrument of claim ~~36~~19, wherein the housing has at least a second opening at a distal end of the housing.

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32. (Original) The surgical instrument of claim 30, further comprising at least two lenses coupled to the at least one fiberoptic.

33. (Original) The surgical instrument of claim 32, wherein at least one of the at least two lenses is disposed at a distal end of the housing, and another of the at least two lenses is disposed in proximity to the first opening in the housing.

34. (Currently Amended) The surgical instrument of claim 36, further comprising a pump for pumping fluid through the surgical instrument.

35. (Original) The surgical instrument of claim 34, wherein the pump is mechanically coupled to the transmission.

36. (Currently Amended) A surgical instrument comprising:

a blade;

a housing in which the blade moves, the housing having a long axis;

a transmission that converts rotary motion to reciprocating, linear motion, wherein the transmission is coupled to the blade such that the blade moves reciprocally in the housing. The surgical instrument of claim 19, wherein the transmission comprises:

two surfaces that are a substantially fixed distance apart;

a cam that rotates about a central axis, said central axis being at an angle to a plane extending between the two surfaces; and

the cam having a curvilinear body, the body having a nonuniform thickness, wherein the body continuously contacts the two surfaces as the cam rotates about the central axis, such that the two surfaces remain at the substantially fixed distance apart as they move linearly in response to the cam's rotation about the central axis;

a first opening in the housing through which a portion of the blade is exposed; and

a cutting surface on said exposed portion of the blade, said surface configured to perform at least one of grinding, filing, and cutting of tissue.

37. (Previously Presented) The surgical instrument of claim 36, wherein said cam's central axis is substantially parallel to a direction of the linear motion of the two surfaces.

38. (Previously Presented) The surgical instrument of claim 36, wherein said central axis is substantially perpendicular to the plane extending between the two surfaces.

39. (Previously Presented) The surgical instrument of claim 36, wherein the two surfaces move linearly back and forth in reciprocating motion in response to the cam's rotation about the central axis.

40. (Previously Presented) The surgical instrument of claim 36, wherein the curvilinear body has a shape comprising at least two toruses, the at least two toruses being partially superimposed, and each of said at least two toruses has a central axis, wherein the central axes of the at least two toruses are at an angle to each other.

41. (Previously Presented) The surgical instrument of claim 36, wherein at least one bearing comprises the two surfaces.

42. (Previously Presented) The surgical instrument of claim 41, wherein two bearings respectively comprise the two surfaces.

43. (Previously Presented) The surgical instrument of claim 36, wherein the curvilinear body is disposed at an angle to the central axis of the cam.

44. (Currently Amended) A surgical instrument comprising:

a blade;

a housing in which the blade moves, the housing having a long axis;

a transmission that converts rotary motion to reciprocating, linear motion, wherein the transmission is coupled to the blade such that the blade moves reciprocally in the housing. The surgical instrument of claim 19, wherein the transmission comprises:

two surfaces that are a substantially fixed distance apart;

rotation means that rotates about a central axis, said central axis being at an angle to a plane extending between the two surfaces; and

the rotation means continuously contacting the two surfaces as the rotation means rotates about the central axis, such that the two surfaces remain at the substantially fixed distance apart as they move linearly in response to the rotation means's rotation about the central axis;

a first opening in the housing through which a portion of the blade is exposed; and

a cutting surface on said exposed portion of the blade, said surface configured to perform at least one of grinding, filing, and cutting of tissue.

45. (Previously Presented) The surgical instrument of claim 44, wherein said rotation means's central axis is substantially parallel to a direction of the linear motion of the two surfaces.

46. (Previously Presented) The surgical instrument of claim 44, wherein said central axis is substantially perpendicular to the plane extending between the two surfaces.

47. (Previously Presented) The surgical instrument of claim 44, wherein the two surfaces move linearly back and forth in reciprocating motion in response to the rotation means's rotation about the central axis.

48. (Previously Presented) The surgical instrument of claim 44, wherein at least one bearing comprises the two surfaces.

49. (Previously Presented) The surgical instrument of claim 44, wherein two bearings respectively comprise the two surfaces.

50. (Previously Presented) The surgical instrument of claim 44, wherein the rotation means has a shape comprising at least two toruses, the at least two toruses being partially superimposed, and each of said at least two toruses has a central axis, wherein the central axes of the at least two toruses are at an angle to each other.

51. (Previously Presented) The surgical instrument of claim 44, wherein the rotation means has a curvilinear body and the curvilinear body is disposed at an angle to the central axis of the rotation means.

52. (Currently Amended) A surgical instrument comprising:

a blade;

a housing in which the blade moves, the housing having a long axis;

a transmission that converts rotary motion to reciprocating, linear motion, wherein the transmission is coupled to the blade such that the blade moves reciprocally in the housing. The surgical instrument of claim 19, wherein the transmission comprises:

two surfaces that are a substantially fixed distance apart;

a cam that rotates about a central axis, said central axis being at an angle to a plane extending between the two surfaces; and



the cam having means for continuously contacting the two surfaces as the cam rotates about the central axis, such that the two surfaces remain at the substantially fixed distance apart as they move linearly in response to the cam's rotation about the central axis;

a first opening in the housing through which a portion of the blade is exposed; and

a cutting surface on said exposed portion of the blade, said surface configured to perform at least one of grinding, filing, and cutting of tissue.

53. (Previously Presented) The surgical instrument of claim 52, wherein said cam's central axis is substantially parallel to a direction of the linear motion of the two surfaces.

54. (Previously Presented) The surgical instrument of claim 52, wherein said central axis is substantially perpendicular to the plane extending between the two surfaces.

55. (Previously Presented) The surgical instrument of claim 52, wherein the two surfaces move linearly back and forth in reciprocating motion in response to the cam's rotation about the central axis.

56. (Previously Presented) The surgical instrument of claim 52, wherein the means for continuously contacting the two surfaces has a shape comprising at least two toruses, the at least two toruses being partially superimposed, and each of said at least two toruses has a central axis, wherein the central axes of the at least two toruses are at an angle to each other.

57. (Previously Presented) The surgical instrument of claim 52, wherein at least one bearing comprises the two surfaces.

58. (Previously Presented) The surgical instrument of claim 57, wherein two bearings respectively comprise the two surfaces.

59. (Previously Presented) The surgical instrument of claim 52, wherein the means for continuously contacting the two surfaces is disposed at an angle to the central axis of the cam.

60-63. (Canceled)

64. (Original) The surgical instrument of claim 34, wherein the pump comprises:

a fluid path;

two plungers configured to at least partially occlude said fluid path;

a cam configured to cause said two plungers to at least partially occlude said fluid path alternately; and

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at least one check valve along said fluid path for reducing backflow of fluid within said fluid path.

65. (Original) The surgical instrument of claim 64, wherein the cam translates in a direction that is substantially perpendicular to a long axis of at least one of said two plungers.

66. (Previously Presented) The surgical instrument of claim 65, wherein the cam translates in a direction that is substantially perpendicular to a long axis of each of said two plungers.

67. (Original) The surgical instrument of claim 35, wherein the pump comprises:  
a fluid path;  
two plungers configured to at least partially occlude said fluid path;  
a cam configured to cause said two plungers to at least partially occlude said fluid path alternately; and  
at least one check valve along said fluid path for reducing backflow of fluid within said fluid path.

68. (Original) The surgical instrument of claim 67, wherein the cam translates in a direction that is substantially perpendicular to a long axis of each of said two plungers.

69. (Currently Amended) The surgical instrument of claim 3619, further comprising at least one opening in the exposed portion of the blade, for transmitting fluid.

70. (Currently Amended) The surgical instrument of claim 3619, wherein the cutting surface comprises an abrasive material.

71. (Currently Amended) The surgical instrument of claim 3619, wherein the cutting surfaces comprises diamond.

72. (Currently Amended) The surgical instrument of claim 3619, wherein the blade comprises stainless steel.

73. (Currently Amended) The surgical instrument of claim 3619, further comprising a handpiece coupled to the housing.

74. (Currently Amended) The surgical instrument of claim 3619, further comprising a video camera.

75. (Original) The surgical instrument of claim 74, wherein the camera is configured to couple with a fiberoptic that extends to a distal end of the housing.

76. (Original) The surgical instrument of claim 73, wherein a video camera is located in the handpiece.

77. (Original) The surgical instrument of claim 76, further comprising a watertight seal in the handpiece.

78. (Original) The surgical instrument of claim 77, wherein the handpiece is configured to contain the video camera in a chamber such that the watertight seal reduces or prevents ingress of at least one of water and bacteria from outside the handpiece into the chamber containing the video camera in the handpiece.

79. (Original) The surgical instrument of claim 73, further comprising a motor in the handpiece, said motor configured to power the rotary motion.

80. (Original) The surgical instrument of claim 79, wherein said motor comprises a gas turbine.

81. (Currently Amended) The surgical instrument of claim 3619, further comprising a cord configured to couple to a proximal end of the surgical instrument, said cord comprising at least one of a fiberoptic, an electrical line, an irrigation channel, a suction line, and a gas tube for powering a gas turbine motor in the surgical instrument.

82-105. (Canceled)

106. (Previously Presented) A surgical instrument, comprising

a housing having a longitudinal axis;

a blade assembly configured to oscillate linearly relative to the housing in a direction generally parallel to the longitudinal axis, the blade assembly comprising a blade having a cutting surface;

a rotary shaft; and

a transmission configured to convert rotation of the rotary shaft into oscillating linear movement of the blade assembly;

wherein the transmission comprises a torus-like shape disposed on the rotary shaft, the torus-like shape having a central axis that is angled relative to an axis of the rotary shaft.

107. (Previously Presented) The surgical instrument of Claim 106, wherein the transmission additionally comprises opposed bearing surfaces that are a substantially fixed distance apart.

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108. (Previously Presented) The surgical instrument of Claim 107, wherein the torus-like shape has a circumferential portion that fits between the opposed bearing surfaces.

109. (Previously Presented) The surgical instrument of Claim 108, wherein a thickness of the circumferential portion varies about the circumference.

110. (Previously Presented) The surgical instrument of Claim 106, wherein the torus-like shape comprises at least two toruses that are partially superimposed, the at least two toruses having central axes that are angled relative to one another.

Please add the following new claims.

111. (New) The surgical instrument of Claim 110, wherein the torus-like shape has a circumferential portion, and a thickness of the circumferential portion varies about the circumference.

112. (New) The surgical instrument of Claim 106, wherein the housing has an opening through which a portion of the blade is exposed.

113. (New) The surgical instrument of Claim 112, wherein the housing shields the blade from access except at the opening.

114. (New) The surgical instrument of Claim 112 additionally comprising at least one opening in the exposed portion of the blade, for transmitting fluid.

115. (New) The surgical instrument of Claim 114 further comprising a pump for pumping fluid through the surgical instrument.

116. (New) The surgical instrument of Claim 112, wherein the blade is substantially flat.

117. (New) The surgical instrument of Claim 106 further comprising a pump for pumping fluid through the surgical instrument.

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#### REMARKS

Please reconsider the above-captioned application in light of the above amendments and the following remarks.

##### Amendment to Title

The minor change in the title of the application is made to increase clarity.

##### Allowable Claims Rewritten

The Examiner objected to Claims 36-59, but indicated that these claims would be allowable if rewritten into independent form. Accordingly, Applicant has rewritten these claims as suggested. Of these claims, Claims 36, 44 and 52 have been rewritten into independent form. Claims 37-43, 45-51 and 53-59 depend from these now-allowable claims, and are also in condition for allowance.

The Examiner rejected Claims 19-30. In order to speed allowance in this case, Applicant has cancelled Claim 19, and made amendments to the dependency of many of these claims so that Claims 2-30 now depend from allowable Claim 36. Applicant reserves the right to pursue claims directed to the rejected and cancelled subject matter in future applications.

##### Withdrawn Claims

Claims 31-35 and 64-81 were withdrawn as not being directed to Applicant's elected species. Certain of these claims have been amended so that all of these claims currently depend from now-allowable Claim 36. Applicant respectfully requests that these claims be reinstated into the application, and contends that they are currently in condition for allowance.

##### New Claims

Applicant has added new Claims 111-117 to more thoroughly recite subject matter that Applicant considers to be part of the invention. Each of these new claims depends from allowed Claim 106 and recites further patentable subject matter. Applicant contends that these claims are in condition for allowance.

#### **CONCLUSION**

For the foregoing reasons, it is respectfully submitted that the rejections set forth in the outstanding Office Action are inapplicable to the present claims. Accordingly, early issuance of a Notice of Allowance is most earnestly solicited.

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The undersigned has made a good faith effort to respond to all of the rejections in the case and to place the claims in condition for immediate allowance. Nevertheless, if any undeveloped issues remain or if any issues require clarification, the Examiner is respectfully requested to call Applicant's attorney in order to resolve such issue promptly.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 8/16/07

By: 

Glen L. Nuttall  
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